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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/453,526	12/03/1999	HARRY B. SMITH	A7302	2759

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EXAMINER

GESESSE, TILAHUN

ART UNIT PAPER NUMBER

2684

DATE MAILED: 01/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/453,526	SMITH, HARRY B.	
	Examiner	Art Unit	
	Tilahun B Gesesse	2684	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-85 is/are pending in the application.
- 4a) Of the above claim(s) 1-10, 20-22, 25, 30-33, 53, 54, 57-60, 63 and 65-68 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-19, 24, 26-29, 34-40, 62, 69-76 and 80-82 is/are allowed.
- 6) ☐ Claim(s) 23, 41, 78, 79 and 83-85 is/are rejected.
- 7) ☐ Claim(s) 42-52, 55, 56 and 61 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>11/23/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This is in response to applicant's amendment and response filed September 3, 2004, in which claims 12-1923-24,26-29,34-52,55-56,61,69-85 are pending.

Drawings

2. New corrected drawings in compliance with 37 CFR 1.121(d) is required in this application because the present drawings are neither clearly readable nor understandable for one ordinary skill in the art. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

4. Claim 83 objected to because of the following informalities: Claim 83, line 5, before the word information "apriori" spelling error. Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 83-85 and 78 are rejected under 35 U.S.C. 102(e) as being anticipated by Erten et al "Erten" (US 6,236,862).

Claim 83, Erten discloses a versatile stand alone antenna and receiving system(column 17, lines 18-30 and figure23) a single stand-alone array antenna operable to receive a plurality of overall receive signals (column 17, lines 18-30 and figure23) a processor that receives the overall receive signals and detects and acquires very weak signals without the assistance of a pilot pulse, a diversity receive method or any other information related to signal conditions of the overall receive signals (figure 21).

Claim 84, Erten discloses a versatile stand alone antenna and receiving system (column 17, lines 18-30 and figure23) 'a single stand-alone array antenna operable to receive a plurality of overall receive signals a processor that receives the overall receive signals and enhances a detestability and acquisition of useful information related to the receive signals by comparing the respective receive signals to multiple predetermined

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surrogate values and determining when the amplitude of the receive signals is closest to one of the surrogate values (see figure 21 and column 17, lines 18-62).

Claim 85, Erten discloses the respective comparing and the determining of the receive signals in said processor is performed in parallel with each other to speed up an overall processing time (see figure 21 and its disclosure).

Claim 78, Erten discloses a versatile stand alone antenna and receiving system (figures 21 and 26) means for approximating a unity signal-to-noise condition by employing wider system bandwidth of the receiving system to provide enough additional noise so that it is nearly equal to the signal and with this arrangement resulting in an increased bandwidth to accommodate many more channels in communications systems and wherein these conditions provide bandwidth noise that can be processed rapidly using rapidly changing noise samples (column 16, lines 47-63 and figures 21 and 26).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claim 23, is rejected under 35 U.S.C. 103(a) as being unpatentable over Erten et al (US 6,236,862) in view of Hattori et al (4057,758).

Claims 23, Erten discloses a stand alone receive system (column 17, lines 18-30 and figure 21) an antenna array with two interoperable arrangements of elements, said antenna array operable to provide signal- plus-noise outputs to an iterative processing method that does not require additional external . augmentation and does not depend on polarization discrimination ,(column 17, lines 41-62 and figure 21). Erten discloses iterative processing method being capable of, achieving dramatic signal-to-noise ratio improvement', improving the ability to distinguish weak signals received by said antenna array, and improving angular discrimination by sharpening a beam of said antenna array (column 17, lines 18-62 and figure 21), wherein said angular discrimination is improved by a phase multiplying process using two or more groups of said receive signals (column 18, lines 28-45 and figure 21), in which the noise has been reduced to permit non- dispersive phase multiplication ((column 18, lines 28-45 and figure 21). Erten differs in teaching a separation of different numbers of half wavelengths. However, Hattori teaches the distance between two antennas exceeds one half the wavelength of the employed carrier wave (column 6, lines 20-29). Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention was made to separate antenna array by half wavelength for better reception of a signal.

Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Erten in view of Gruenberg (US 3757335).

Claim 41, Erten discloses a method of processing signals received by an array of a receiving system (column 17, lines 18-30 and figure 21), configuring a numerical array of modified signal-plus-noise values representative of said received signals such that each noise portion of said signal-plus-noise value transitions through zero at a location in the array,(column 17, lines 41-62) the location being determined by the polarity and magnitude of said noise (see figures 6-7), and sensing how the injection of a programmed iterative value will change a relative location within said array by sensing, in progressive steps, when each injected iterative value causes a match in the numerical values of signal-plus-noise from two rows of the numerical array (column 24 lines 1-34 and figures 21 and 26).

Erten differs in teaching closer to, a center of left and right portions of the array. However, Gruenberg discloses a center of left and right portions of the array (see figure 1).). It would have been obvious to a person of ordinary skill in the art at the time of the invention to sector the antenna into left and right side of probe in order to acquire a better reception and to avoid interfering signal using dividing technique.

Claim 79 is rejected under 35 U.S.C. 103(a) as being unpatentable over Erten in view of Laflin (US 5,140,702).

Claim 79, Erten discloses a versatile stand alone antenna and receiving system (figures 21 and 26) detection process resulting in synchronization of a timing clock that samples in both in-phase and quadrature analog-to-digital converters so as to establish

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a system reference phase and thereafter introduce an appropriate sequence of surrogate signal estimates, (column 9, lines 1-17 and figure 8 and 9).

Erten differs in teaching means for searching and acquiring a desired signal in time synchronization. However, Laflin teaches searching and receiving or synchronizing a signal with strong strength (abstract). It would have been obvious to a person of ordinary skill in the art at the time of the invention to search and synch with strong signal strength, for selecting best synchronizing signal and avoid receiving corrupted data.

Allowable Subject Matter

9. Claims 42-52,,55-56,61 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. Claims 12-19,24,26-29,62,34-40,62,64,69-76,80-82 are allowed over the prior art of record.

The following is an examiner's statement of reasons for allowance: the prior art does not specifically teach aggregating signal-plus-noise data output from an antenna into a plurality of groups, each group containing data having a similar phase, wherein the phase corresponding to each group is a multiple of the phase corresponding to the other groups, said multiple being determined by a spacing between right and left elements of each group from the center of the antenna array and wherein further. said groups are formed by combining data from respective right and left antenna elements and said right and left antenna elements are equidistant from a central common

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reference located at a center of the array of elements and corresponding to a phase angle. ϕ . of zero phase.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

11. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Raleigh et al (US 6,665,379) discloses a method for forming an adaptive phased array transmission beam pattern at a base station (abstract).

Roy, III et al (US 5,515,378) discloses multiple antenna arrays receiving system and iteratively processing technique (see figure 4).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tilahun B Gesesse whose telephone number is 703-308-5873. The examiner can normally be reached on flex.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on 703-308-7745. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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January 5, 2005


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